

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 180, line 2 with the following amended paragraph:

900 ml of toluene was introduced into a 1-L glass polymerizer purged with nitrogen, and then 6.6 ml (48 mmol) of triethyl aluminum and 2.72 ml (40 mmol) of allyl alcohol were added thereto, and the mixture was stirred at 50°C for 5 minutes. 17.6 mg of metallocene compound represented by the general formula (XXI) was introduced into another 20-ml Schrenk-Schlenk flask purged with nitrogen, and 1.12 ml of toluene solution of methyl aluminoxane (MAO) (Al = 1.28 M) was added thereto and stirred for about 10 seconds, and the resulting solution was added to the polymerization solution. While an ethylene gas was circulated at 3 L/h, the mixture was stirred at 50°C for 105 minutes. The reaction was terminated with isobutyl alcohol (30 ml) and conc. hydrochloric acid (6 ml), and the reaction solution was poured into 2 L of methanol to precipitate a polymer. The reaction solution was stirred overnight, and the polymer was filtered with a glass filter and then dried at 50°C under reduced conditions at 10 Torr for 10 hours to give 8.63 g PE modified with allyl alcohol at the terminal thereof. As a result of analysis by gel permeation chromatography (GPC), the molecular weight of the polymer was 26500 in terms of weight-average molecular weight (M_w), and the molecular weight distribution (M_w/M_n) was 2.26. From ¹H-NMR measurement results, a peak of terminal hydroxy methylene (-CH₂-OH) attributable to the introduced allyl alcohol was observed at δ = 3.3-3.4 ppm.

Please replace the paragraph beginning at page 184, line 23 with the following amended paragraph:

900 ml of toluene was introduced into a 1-L glass polymerizer purged with nitrogen, and while an ethylene gas (100 L/h) was circulated, 5.0 ml (5.0 mmol) of stock solution (1.0 M toluene solution) of triethyl aluminum and 0.80 ml (4.0 mmol) of 10-undecen-1-ol were added thereto, and the mixture was stirred at 50°C for 5 minutes. 17.6 mg of metallocene compound

represented by the above formula (XXI) was introduced into another 20-ml Sehrenk-Schlenk flask purged with nitrogen, and 1.14 ml of toluene solution of methyl aluminoxane (MAO) (Al = 1.37 M) was added thereto and stirred for about 10 seconds, and the resulting solution was added to the polymerization solution. While an ethylene gas was circulated at 100 L/h, the mixture was stirred at 50°C for 3 minutes (600 rpm). The reaction was terminated with isobutyl alcohol (15 ml) and conc. hydrochloric acid (2 ml), and the reaction solution was poured into 2 L of methanol to precipitate a polymer. The reaction solution was stirred overnight, and the polymer was filtered with a glass filter and then dried at 80°C under reduced conditions at 10 Torr for 10 hours to give 10.09 g ethylene/10-undecen-1-ol copolymer. As a result of analysis by gel permeation chromatography (GPC), the molecular weight of the polymer was 109300 in terms of polyethylene-equivalent weight-average molecular weight (Mw), and the molecular weight distribution (Mw/Mn) was 3.04. From ¹H-NMR measurement results, the content of the comonomer (10-undecen-1-ol) introduced was 0.78 mol-%.

Please replace the paragraph beginning at page 193, line 14 with the following amended paragraph:

A 50-ml Sehrenk-Schlenk tube sufficiently purged with nitrogen was charged with 5.12 ml of o-xylene, 4.28 ml of MMA, 14.3 mg of copper bromide(I), 0.4 ml of solution of PMDETA (0.5 mmol/ml in terms of PMDETA molecule) in o-xylene, and 0.2 ml of (1-bromoethyl)benzene in o-xylene (0.5 mmol/ml in terms of (1-bromoethyl)benzene molecule), and the mixture was stirred under heating at 90°C for 4 hours. The resulting reaction solution was poured into 200 ml of methanol to precipitate a polymer. The precipitated polymer was filtered with a glass filter (G3), and the polymer on the filter was washed 3 times with 10 ml of methanol and then vacuum-dried for 10 hours to give 2.84 g solid polymer. The (PS-equivalent) molecular weight of the polymer was measured by GPC, indicating that the Mw was 36400, the Mn was 28000, and the Mw/Mn ratio was 1.3. Then, 2.8 g of the PMMA obtained above was introduced into a 30-ml Shrenk tube sufficiently purged with nitrogen, and then 6.43 ml of o-xylene, 2.14 ml of MMA, 1.49 g of the EPR macromonomer synthesized in (1) above, and 1.23 ml of solution of

copper bromide and PMDETA in o-xylene (0.081 mmol/ml in terms of Cu atom, 0.16 mmol/ml in terms of PMDETA molecule) were added thereto, and the mixture was stirred under heating at 90°C for 6 hours. The resulting reaction solution was poured into 400 ml of methanol to precipitate a polymer. The precipitated polymer was filtered with a glass filter (G3), and the polymer on the filter was washed 5 times with 10 ml of hexane and 3 times with 10 ml of methanol, and then vacuum-dried for 10 hours to give 4.3 g solid polymer. The (PS-equivalent) molecular weight of the polymer was measured by GPC, indicating that the Mw was 74200, the Mn was 53000, and the Mw/Mn ratio was 1.4. ¹H-NMR measurement indicated that PMMA:EPR = 86:14 (wt%). A PMMA-b-(PMMA-g-EPR) block polymer having a PMMA chain and a PMMA-g-EPR bound thereto was obtained in this manner.

Please replace the paragraph beginning at page 214, line 2 with the following amended paragraph:

A 50-ml Schlenk tube sufficiently purged with nitrogen was charged with 0.81 g of the EPR macromonomer synthesized in Example 1(1), and then with 4.03 ml of o-xylene, 4.28 ml of MMA, 1.19 ml of solution of copper bromide and PMDETA in o-xylene (0.084 mmol/ml in terms of Cu atom, 0.168 mmol/ml in terms of PMDETA molecule), and 0.5 ml of o-xylene solution of the polymerization initiator (0.05 mmol/ml initiator) obtained in (1) above, and the mixture was stirred under heating at 90°C for 8 hours. The resulting reaction solution was poured into 400 ml of methanol to precipitate a polymer. The precipitated polymer was filtered with a glass filter (G3), and the polymer on the filter was washed 3 times with 10 ml of hexane and 3 times with 10 ml of methanol, and then vacuum-dried for 10 hours to give 1.62 g solid polymer. The (PS-equivalent) molecular weight of the polymer was measured by GPC, indicating that the Mw was 117000, the Mn was 48000, and the Mw/Mn ratio was 2.4. The content of each unit in the formed polymer, as determined by NMR, was 90 mol% MMA and 10 mol% EPR. That is, a star-shaped polymer whose arm was a graft polymer having EPR in a side chain was formed by copolymerizing the EPR macronomoner with MMA by using the above initiator.

Please replace the paragraph beginning at page 214, second line from the bottom with the following amended paragraph:

A 100-ml Sehrenk-Schlenk tube sufficiently purged with nitrogen was charged with 2.4 g of the EPR macromonomer synthesized in Example 9(1), and then with 34.7 ml of o-xylene, 2.14 ml of MMA, 1.19 ml of solution of copper bromide and PMDETA in o-xylene (0.34 mmol/ml in terms of Cu atom, 0.67 mmol/ml in terms of PMDETA molecule), and 2.0 ml of o-xylene solution of the polymerization initiator (0.05 mmol/ml initiator) obtained in Example 14(1) above, and the mixture was stirred under heating at 90°C for 6 hours. The resulting reaction solution was poured into 400 ml of methanol to precipitate a polymer. The precipitated polymer was filtered with a glass filter (G3), and the polymer on the filter was washed 3 times with 10 ml of hexane and 3 times with 10 ml of methanol, and then vacuum-dried for 10 hours to give 0.82 g solid polymer. The (PS-equivalent) molecular weight of the polymer was measured by GPC, indicating that the Mw was 27000 and the Mw/Mn ratio was 1.3. The Tg of the polymer, as determined by DSC, was 58°C. The content of each unit in the formed polymer, as determined by ¹H-NMR, was MMA:EPR = 66:34 (wt%), and it was revealed that 95% of the four polymerization initiation sites possessed by the polymerization initiator contribute to initiation of polymerization. That is, a star-shaped polymer having about 3.8 PMMA-g-EPR chains was formed by copolymerizing the EPR macromonomer with MMA by using the above initiator. By observing this graft polymer under a transmission electron microscope (TEM), it was found that EPR segments and PMMA segments were finely divided in the order of several nm or less, as shown in Fig. 4.

Please replace the paragraph beginning at page 216, line 1 with the following amended paragraph:

A 300-ml Sehrenk-Schlenk tube sufficiently purged with nitrogen was charged with 9.8 g of the EPR macromonomer synthesized in Example 2(1), and then with 3.5 ml of o-xylene, 0.21 ml of MMA, 1.2 ml of solution of copper bromide and PMDETA in o-xylene (0.03 mmol/ml in

terms of Cu atom, 0.06 mmol/ml in terms of PMDETA molecule), and 0.2 ml of o-xylene solution of the polymerization initiator (0.05 mmol/ml initiator) obtained in Example 14(1) above, and the mixture was stirred under heating at 90°C for 6 hours. The resulting reaction solution was poured into 400 ml of methanol to precipitate a polymer. The precipitated polymer was filtered with a glass filter (G3), and the polymer on the filter was washed 3 times with 10 ml of hexane and 3 times with 10 ml of methanol, and then vacuum-dried for 10 hours to give 0.22 g solid polymer. The content of each unit in the formed polymer, as determined by ¹H-NMR, was MMA:EPR = 95:5 (wt%).